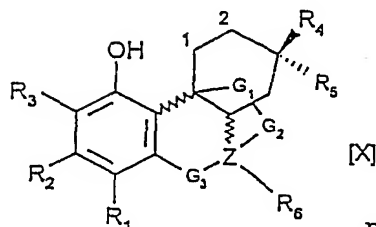


# Claims

## 1. Compounds of the general formula (II)



Formula (II)

in which  $R_1$ ,  $R_2$  either are the same or different and represent

- hydrogen, F, Cl, Br, I, CN, NC, OH, SH,  $NO_2$ ,  $SO_3H$ ,  $NH_2$ ,  $CF_3$ , or

- substituted or unsubstituted straight or branched lower ( $C_1$ - $C_6$ ) alkyl or alkoxy or

- an amino group substituted by one or more substituted or unsubstituted straight or branched lower ( $C_1$ - $C_6$ ) alkyl or alkyl carbonyl or alkoxy carbonyl group or

- a  $COOH$ ,  $COO$  alkyl,  $CONH$ ,  $CON$  alkyl group or

- $-(CH_2)_n-Cl$ ,  $-(CH_2)_n-Br$ ,  $-(CH_2)_n-OH$ ,  $-(CH_2)_n-COOH$ ,  $-(CH_2)_n-CN$ ,  $-(CH_2)_n-NC$ , in which

- $R_1-R_2$  may together form  $-CH=CH-CH=CH-$ ,  $-O-(CH_2)_n-O-$ , with  $n = 1$  to 3;

$R_3$  is  $OCH_3$  or the same as  $R_1$ , or

$R_2-R_3$  can jointly form:  $-O-(CH_2)_n-O-$ , with  $N = 1$  to 3;

$R_4$ ,  $R_5$ : are both hydrogen or, alternatively, any combination of hydrogen or an alkyl, alkenyl, alkynyl, or

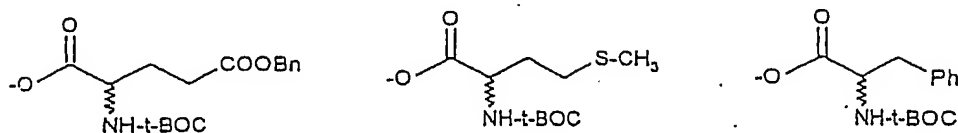
- $S-R_8$ , wherein  $R_8$  is hydrogen or a substituted or unsubstituted straight or branched lower ( $C_1$ - $C_{10}$ ) alkyl group

- $SO-R_8$ ,  $SO_2R_8$

- OH, O-protective group
- O-CS-N-R<sub>8</sub> (thiourethanes)
- O-CO-N-R<sub>9</sub>, wherein R<sub>9</sub> has the following meaning:

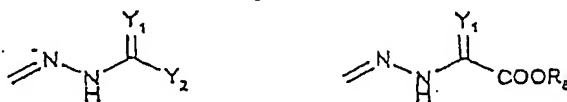


- O-CO-R<sub>8</sub>, including esters with a substitution pattern of amino acids as follows



- R<sub>4</sub>, R<sub>5</sub> may jointly be hydrazone (=N-NH-R<sub>10</sub>, =N-N(R<sub>10</sub>, R<sub>11</sub>), oximes (=N-O-R<sub>11</sub>), wherein R<sub>10</sub> is hydrogen, a substituted or unsubstituted straight or branched lower (C<sub>1</sub>-C<sub>6</sub>) alkyl or alkyl carbonyl or alkyl carbonyloxy group as well as a sulfonic acid group, and R<sub>11</sub> is hydrogen, a substituted or unsubstituted straight or branched lower (C<sub>1</sub>-C<sub>6</sub>) alkyl or alkyl carbonyl group, as well as a sulfonic acid group;

- R<sub>4</sub> and R<sub>5</sub> may also be:



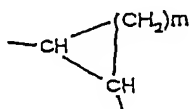
wherein  $Y_1, Y_2 = O, S, NH$  or  $N-R_{10}$  (excess valences in each case are  $-H$ )

- wherein, in the event that  $R_4$  is not  $H$ ,  $R_5$  can also be  $OH$  and, in the event that  $R_5$  is not  $H$ ,  $R_4$  can also be  $OH$ .

$G_1, G_2$ : jointly or separately have the meaning:

- $-C(R_{13}, R_{14})-$ , wherein  $R_{13}, R_{14}$  can be hydrogen,  $OH$ , a substituted or unsubstituted straight or branched lower alkyl, aryl, alkoxy or aryloxy group or jointly an alkyl spiro group ( $C_3$  to  $C_7$  spiro ring).

- $G_1$  and  $G_2$  may jointly represent



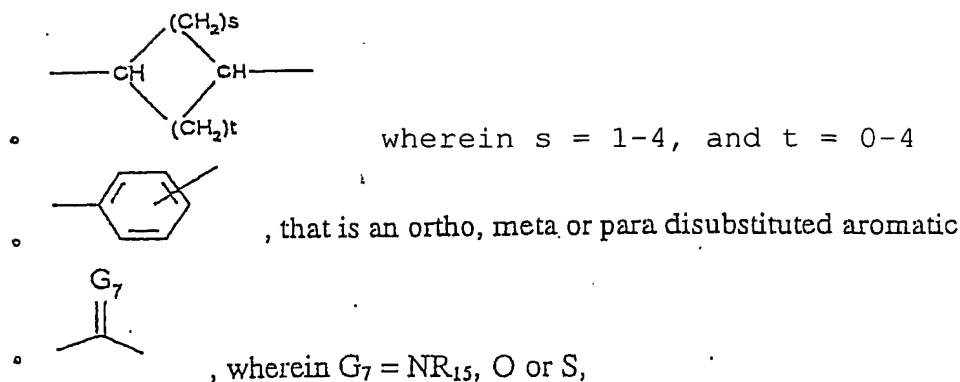
with  $m = 1$  to  $7$

$G_3$ : represents  $CH_2$  or  $=CO$

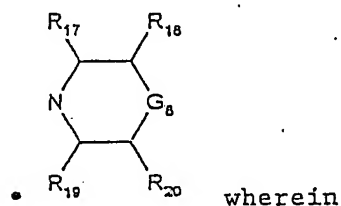
$R_6$  represents a group  $-(G_4)_p-(G_5)_q-G_6$  with  $p, q = 0-1$ , in which  $G_4$  satisfies the following definition

- $-(CH_2)_s-$ ,  $-C(R_{15}, R_{16})-(CH_2)_s-$ , with  $R = 1$  to  $6$  and  $R_{15}, R_{16} =$  hydrogen, or substituted or unsubstituted straight or branched lower alkyl, cycloalkyl, or aryl groups

- $-O-$  or  $-NR_{15}$



$G_5$  can be identical with or different from  $G_4$  and, in the event that  $P = 1$ , additionally represents  $-S-$ ,  
 $G_6$  fulfills the following definition:



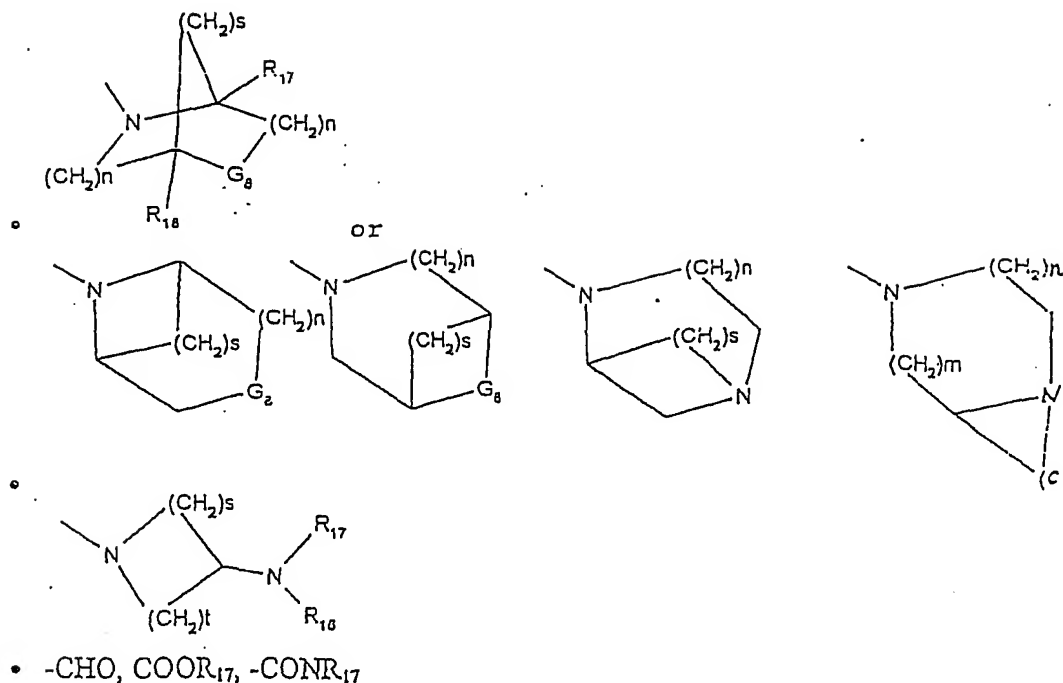
$R_{17}$ ,  $R_{18}$ ,  $R_{19}$  and  $R_{20}$  individually or jointly are the same or different, and are hydrogen, substituted or unsubstituted straight or branched lower alkyl, cycloalkyl or aryl groups, where  $R_{17}$  and  $R_{18}$  and  $R_{19}$  and  $R_{20}$  can jointly form a cycloalkyl group (with a ring size of 3-8)

$G_8 = O, S, NH, NR_{21}-(CH_2)_n-$ ,

$R_{21} = CHO, COOR_{17}$  or a heteroaryl group, which is unsubstituted or substituted identically or differently by one or several F, Cl, Br, I,  $NO_2$ , OH, alkyl, alkyloxy, CN, NC or  $CF_3$ , CHO, COOH, COO alkyl,  $SO_3H$ , SH or S-alkyl groups, or

a methyl group, which is substituted by 1-3 phenyl groups, which are unsubstituted or substituted identically or differently by one or more F, Cl, Br, I,  $NO_2$  alkyl, alkyloxy, CN, NC or  $CF_3$  groups,

wherein  $G_8$  can also be:



- a substituted or unsubstituted straight or branched lower alkyl, alkenyl, alkynyl, cycloalkyl or aryl groups,

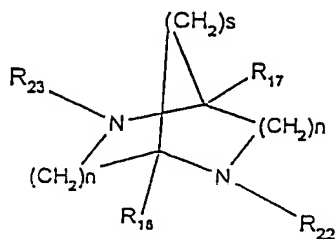
- $-O-R_{17}$ ,  $-NR_{17}R_{18}$ , phthalamido,  $-CN$  or  $-NC$ ;

$R_7$  is identical with  $R_6$  or represents  $-O^{(-)}$  (N-oxide) or a free electron pair (e-pair), wherein  $R_6$  and  $R_7$  can also form a common ring, 3 to 8 carbon atoms in size and

- X exists only if, and represents an ion of a pharmacologically unstable inorganic or organic acid, where  $R_5$  and  $R_6$  are present and the nitrogen atom thus carries a positive charge; and

- $Z = N$  or  $N^+$  in the event that  $R_4$  and  $R_7$  are present jointly and  $R_7$  is not  $O^-$ .--

## 2. Compounds having the general formula (III):



wherein  $R_{22}$

Formula (III)

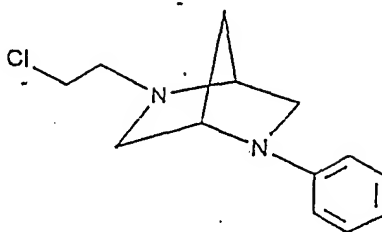
- is a (hetero) aryl group, which is unsubstituted or substituted identically or differently by one or several F, Cl, Br, I,  $\text{NO}_2$ ,  $\text{NH}_2$ , OH, alkyl, alkoxy, CN, NC or  $\text{CF}_3$ , COOH, COOalkyl,  $\text{SO}_3\text{H}$ , SH or S-alkyl groups or
- a methyl group, which is substituted by two phenyl groups, which are substituted identically or differently by one or more F, Cl, Br, I,  $\text{NO}_2$ ,  $\text{NH}_2$ , OH, alkyl, alkoxy, CN, NC or  $\text{CF}_3$ , CHO, COOH, COOalkyl,  $\text{SO}_3\text{H}$ , SH or S-alkyl groups,

$R_{17}$ ,  $R_{18}$ , n, s having the meanings given for the general formula (I) and

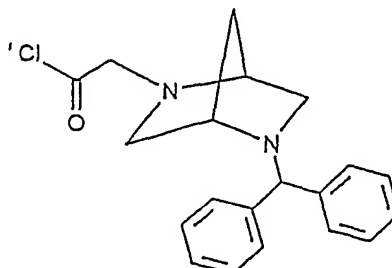
$$R_{23} = -(G_5)_q - (G_4)_p - G_9$$

wherein  $G_4$  and  $G_5$  have the meanings given for the general formula (I) and  $G_9$  is defined as F, Cl, Br, I, OH, O-ts, O-ms, O-triflate, COOH, COCl, CHO,  $-\text{O}-R_{17}$ ,  $-\text{NR}_{17}\text{R}_{18}$ , phthalimido, -CN or -NC or by other groups suitable for nucleophilic substitutions, addition reactions, condensation reactions, etc.

3. A compound of claim 2 having the formula:



4. A compound of claim 2 having the formula:



5. A composition consisting essentially of a compound according to claim 2, in admixture with a pharmaceutically acceptable excipient.

6. A method for the treatment of Alzheimer's disease, comprising administering to a human patient in need thereof a pharmaceutically acceptable amount of a compound as claimed in claim 2.

7. A method for the treatment of trisomy 21, comprising administering to a human patient in need thereof a pharmaceutically acceptable amount of a compound as claimed in claim 2.